rcel Trench Overall score (0,1, or 2)	I Dovi owor	iated with Rad ed Building/Site	Adjacent Trenches	TU Area m2	Во	Plots		Q-Q Plots	Rounds of excavation	Gamma scan or static concerns	Summary of FSS Samples	On vs offsite lab	Time Series	Suspect name (1=yes, 0=no)	Name, if suspect	Name, if not falsifying suspect g (1=Yes 0=no)	Signs of falsification summary	Iworkniai	ns of failure to low workplan	Comments - Other	Questions for Navy	See additional EPA statistical analysis	Recommend for PCA (1 or 0)		No gamma static and scan	CDPH ecommendation
-3 TU174 NA	NA 815 N	NRDL Building	TU 184 and TU 187	424		NA		NA	0 e xca va ti o n	No date or time was recorded for the static survey measurements in SUPR. 2. Static survey measurements are on the higher side of the scan range and inconsister with scan data (range much smaller than scan data rang reported).	scan much larger than static data). Scan surveys and systematic sampling were performed in TU174	4. Limited Offsite analysis performed on FSS samples.	NA	1	C. Bell	NA 0	NA	0	NA	tatic survey date and time not provided in SUPR. Gamma static dataset inconsistent with scan data (range much smaller than scan data range reported)	Explain why the gamma static data is inconsistent with gamma scan data range?	NA	NA	NA	NA	NFA
TU176 NA	NA	NA	TU 170, TU 175, TU 183		ariability, but no	ive somewhat lo lower than adjac nits.	cent but are no	owest activity Ac-228 samp 4) were all taken from the southern sidewall, t adjacent. Other samples e sidewall (4, 6, 10, 12) have typical activities.	0 excavation	1. Static survey date and time were not provided in SUPF Gamma static dataset consistent with scan data. 2. Stat range = 6,577 – 7,189. Scan Range = 4,210 – 7,180 (investigation level = 7,240 cpm)	analyzed within 2 working days? Observation: Mos samples were counted on 08/20/17; one sample was counted on 08/23/17 (next working day).	0.0141 versus onsite results of 0.18506 pCi/g.	zero; two samples (08,14) results were <0.1 pCi/g for Ac-228.	1	C. Bell	NA 0	NA	0	NA	NA	Explain why the Two samples were analyzed offsite (07, 14). Explain why Results for sample 14 are inconsistent: K-40 offsite was -0.0214 versus onsite value of 4.2189 pCi/g; Bi-214 offsite was 0.0141 versus onsite results of 0.18506 pCi/g	NA	NA	NA	NA	NFA
TU178 NA	NA Bu	uilding 820	TU 166, TU 177 ,TU 179	900		NA	characteri	rstematic samples display stics of at least two differe data opulations for K-40.	t 0 excavation	1. Gamma static measurements range from 5,004 to 5,63 cpm. 2. Gamma static dataset is less variable and inconsistent with gamma scan data and final systemati sample results. 3. Gamma scan performed on 08/24/201 at 09:30, before collection of biased and final systematic samples. Gamma scan range reported a 3,920 – 7,060 cpm, with an investigation level of 7,204 cpm. 4. Gamma scan dataset is consistent with final systematic sample results but inconsistent with less	c FSS samples were collected on 08/24/2010. Final set of confirmatory/biased samples were collected on 08/24/2010.	1. Two bias samples (1 and 2) and two final systematic samples (27 and 28) were sent to the offsite lab for confirmation. 2. The onsite lab reported higher Bi-214 results for samples 1, 2, 27, and 28 than the offsite lab. 3. The onsite lab reported higher Ra-226 results for samples 1, 2, 27, and 28. The Ra-226 results reported by the onsite lab were below the investigation level.	sample Ac-228 (sample 27) has an	1	C. Bell	NA 1	Final systema samples displ characteristics at least two different data populations fo 40.	of O	NA	NΛ	Explain why the gamma static data is inconsistent anad less variable with gamma scan data range?	NA	NA	NA	NA	Resample
TU179 NA	NA	NA	TU-166, TU-172, TU- 173, TU-178, TU- 180	850 c	is nearly twice urrounding four immediately adja indicated K-40 onsistent with th	is 12.35 pCi/g, when the activity of the Tus. TU181, while cent to this TU, a activity averages TU. High K-40 lenon in sand.	The K-40 multiple of K-40 result	and Ac-228 plots indicates ata sets. The high Ac-228 a are indicative of pipe tren ands with high NORM activi	d ch 0 excavation	The static and scan data is inconsistent (4,978-5,459 cpm). This data appears to represent meter variations and not the activity variations found in the field survey. Scan range for the 2350-1 Instrument is 4,380 – 7,170 cpm. The sigma investigation level for the 2350-1 Instrument is 7,200 cpm.	t	Two sample were analyzed offsite (05 and 08) and were consistent with the onsite results, except for samples 08 (K-40), where onsite was 13.8 pCi/g and offsite was 4.7 pCi/g. Cs-137 and Ra-226 results were equivalent	higher than average Ac-228 activity, which does not correlate to elevated activities for other plot isotopes. The activity of K-40 is high compared to other HPNS soils in most of the TU17	1	C. Bell	NA O	NA	0	NA	NA	Explain why the gamma static data is inconsistent anad less variable with gamma scan data range?	NA	NA	NA	NA	NFA
TU180 NA	NA	NA	TU-166, TU-172, TU- 173, TU-178, TU- 179	857	ariations from the oultiple populati lata set. The high indicative of the ands with high N activity samples a fill materia	ns of samples in activity samples possible beddir	ow all three be evaluated issue). The low variant and cate and samples a bedding sample sampl	d Ac-228 sample 8 indicate n normal concentrations for plotted isotopes and should atted (possible data quality K-40 plots indicate high a ations from the mean and multiple populations in the samples. The high activity re indicative of the possiblands with high NORM activity samples are likely fill material with low K-40 concentrations.	d 0 excavation e y.	Scan range for 2350-1 Instrument is 4,810 – 6,930 cpm 3 sigma investigation level for 2350-1 Instrument is 7,200 cpm. The static data (4,841-5,279 cpm) are inconsistent with the scan data. All static readings are at or near the lower range of the scan measurements. This data appears to represent meter variations and not the activity variations found in the field survey.	FSS samples were collected on 09/2/2010. FSS	Two samples were analyzed offsite (01 and 02) and were consistent with the onsite results, except for K-40. Sample 01 presented: onsite 8.91 pCi/g and offsite 13.9 pCi/g. Cs-137 and Ra-226 results were equivalent	plotted isotopes and should be	1	A. Smith	NA O	NA	0	NA	NA	Explain why the static data are inconsistent with the scan data? Explain why the three isotopes are lower than normal in Sample 8?	NA	NA	NA	NA	NFA
TU181 NA	NA	NA	TU-170, TU-173, TU- 175, TU-180, TU- 182	903	for Bi-214, but va vith adjacent TUs	ance of FSS samp iance is consiste and is not as low Js onsite.	ent	NA	0 exca va ti on	Gamma static dataset is inconsistent with scan data. Static Range: 4,580 to 4,846 cpm The static readings wer performed by a suspected worker and appear anomalous. The range of static readings is below the reported scan range and the low variability of static measurements does not capture the variability observe in the soil sample results. Scan Range: 5,270 to 7,130 cpm (Investigation level: 7,204 cpm)	FSS samples were analyzed on 09/7/10 and 09/8/10 Samples were collected on 09/7/10 and 09/8/10.	Two samples analyzed offsite (01 and 06): Sample 01 is inconsistent: Ac-228 onsite result was 0.29 pCi/g while the offsite result was 0.0 pCi/g (error bars overlap) Bi-214 onsite result was 0.34 pCi/g while the offsite result was -0.04 pCi/g (error bars do not overlap). Sample 06 is consistent. This issue is typical of HPNS data and not directly indicative of falsification.	-	1	R. Roberson	NA O	NA	0	NA		Explain why the static data are inconsistent with the scan data? Explain why there is a difference between offsite vs onsite data?	NA	NA	NA	NA	NFA
TU182 NA	NA	NA	SU-173, SU-175, SU- 181, TU-183		but this variabili	r Bi-214 and Ac-2 y is consistent w ent TUs.	vith located a	18 (low Ac-228 activity) is djacent to TU183, which als low Ac-228 activity sample		1. Gamma static dataset inconsistent with scan data an Final Systematic sample dataset. Static data exhibit anomalously tight distribution, but do not directly indicate soil sample falsification. 2. Gamma swtatic Range: 5,113 to 5,394 cpm. 3. Scan Range: 4,220 to 7,130 cpm (Investigation level: 7,204 cpm) 4. Scan survey was performed on 09/09/2010 at 13:00, after final systematic sample collection. Gamma scan dataset is inconsisten with static data.	FSS Samples 01 through 18 were collected on 09/09/10 and 09/10/2010	Ac-228 onsite result was 0.29 pCi/g while the offsite result was 0.0 pCi/g (error bars overlap) Bi-214 onsite result was 0.34 pCi/g while the offsite result was -0.0 pCi/g (error bars do not overlap). Sample 06 is consistent.		1	C. Bell	NA 0	NA	0	NA	NA	Explain why the static data are inconsistent with the scan data?	NA	NA	NA	NA	NFA
TU183 NA	NA	815	TU-182, TU-184, TU- 166, TU-176	891		NA	Two possi	ole data populations for K-	0 0 excavation	1. Static survey date and time are not provided in SUPR 2. Static Survey dataset is consistent with scan data Gamma static dataset consistent with scan data. 3. Sca Range =3120- 6870 (investigation level = 7,240 cpm)	FSS Samples were collected on 9/14/2010 and	Comparison intermediate (limited offsite analyses available for comparison with FSS samples)	One FSS sample result is at or below zero. Ac-228	1	C. Bell	NA 1	Two possible data populatio for K-40		NA	NA	NA	NA	NA	NA	NA	Resample
3 TU185 NA	NA	NA	TU-168, TU-188, TU- 345	814		ntain outliers on the distribution	the Instantial	d K-40 activities indicate th or at least two different da populations		1. Scan surveys and systematic sampling were performe in TU185. TU 185 had a total surface area of 814 square meters. 2. No measurements above the investigation level were identified during the performance of gamma scans in TU185. Therefore, no additional surveys or sampling were performed. No date or time was recorde for the static survey in the SUPR. 3. Scan survey was performed on 09/24/10 at 10:00 before the commencement of Systematic post excavation samples were collected after a grid was established using the VSP. Static measurements generally agree with scan measurements. sampling. Gamma scan range reported at 3,440 to 7,040 cpm, with an investigation level of 7,204 cpm. Scan data generally agrees with the static measurements.	FSS Soil Samples were collected 9/24/2010 and Samples were counted on 9/27/2010 and 9/28/2010	Two samples for TU185 were sent offsite for analysis One sample had an RPD of 19% which is acceptable and one with an RPD of 48% which indicates high bia by the onsite lab	Anomalously low activity	0	NA	C Hughes 1	Activities for A 228 and K-40 indicate potential for a least two dat populations	t 0	NA	NA	Explain why activities for Ac-228 and K-40 indicate potential for at least two data populations	NA	NA	NA	NA	Resample
TU187 NA	NA	NA	TU-187 connects to TU-174 on the north, TU-189 on the east, TU-166 and TU-169 on the south and TU-184 on the west	757		NA		NA	0 e xca va ti o n	Static survey date and time was not provided in the SUP Gamma static dataset is consistent with scan data Scar survey performed on at 10/05/2010 at 08:30 before FSS sample collection.	confirmatory/biased sample was collected on	Comparison indeterminate (limited offsite analyses available for comparison with FSS samples)	One FSS sample result was at or below zero. Ac-228	1	C. Bell	NA 0	NA	0	NA	NA	NA	NA	NA	NA	NA	NFA
TU188 NA	NA	NA	TU 168 and TU 190	870		NA		d K-40 samples indicate th or at least two different da populations		No date or time is provided in the SUPR. The Static measurements are on th low end of the gamma scan range. The scan performed on 10/06/10 at 13:15 after th commencement of sampling. Gamma scan range was reported at 2,440 to 6,990 cpm with an investigation leve of 7204 cpm. Scan data are consistent with static measurements and less than the scan threshold.	sample was collected on 10/06/10 samples	Two samples were sent offisite for analysis This yielded one detectable Ra-226 offsite result. The resulting RPD was 97%	1. BI-214: Two results near zero 2. Ac 228 Three results near zero 3. Five results less than 2 pCi/g	1	C. Bell	NA 1	activities for A 228 and K-40 indicate potential for a least two dat populations	t 0	NA	NA	Explain why activities for Ac-228 and K-40 indicate potential for at least two data populations	NA	NA	NA	NA	Resample
TU189 NA	NA	NA	TU 187 and TU 190	623	deviations that	have a standard s greater than th ean	systemation the poter	plotted radionuclides have sample results that indica tial for at least two differe data populations	e O o vestion	No date or time was recorded for the static survey in SUPR. Static measurements are on the higher side of th scan range and consistent with the scan. Scan performe on 10/15/2010 at 14:00 after the comencement of the sampling. Gamma scan range was reported at 3,080 to 6,750 cpm, with an investigation level of 7,204	d 1. Samples were collected on 10/15/2010 2. All FSS samples were analyzed on 10/27/10	Only one ore two samples had detectable Ra-226 activity for both laboratories the comparison yielded an RPD of 121%.	FSS Systematic Samples indicate the potential for at least two data popluations for Bi-214. Five FSS Systematic sample results were reproted with values less than zero for Ac-228. FSs Systematic samples indicate the potential for a least two data populations	1	C. Bell	NA 1	All three plotte radionuclide have systemat sample result that indicate the potential for a least two different data populations	c s e O t	NA	NA	Explain why Bi-214, Ac-228 and K-40 have systematic sample results that indicate the potential for at least two different data populations	NA	NA	NA	NA	Resample

Summary of EPA review of Parcel UC-1.2.3 and D-2 Trench Units - Interim Draft [Insert date]

Number of TU's					% of Parcel UC's	
	Number	01 10 3			& D-2 total	
Parcel D-2	Parcel UC-1	Parcel UC-2	Parcel UC-3	Total		
7	12	8	21	48	100%	Total trench units in Parcel UC's & D-2
avy reviewe	d 70 total Tren	ch Units to loo	k for signs of	potential fals	ification	
4	3	0	16	23	57%	Navy recommended confirmation sampling due to signs of potential falsification
2	0	0	0	2	29%	Navy recommended reanalysis of archived samples
1	9	8	5	23	14%	Navy recommended NFA = No further action due to signs of falsification, but potential further action due to uncertainty
PA reviewea	the 23 Trench	Units recomm	ended for NFA	4		
				0	0%	EPA score 0 = No specific findings of particular concern
				0	0%	EPA Score 1 = Need further review
_				0	0%	EPA Score 2 = Need resampling before determination that the record supports ROD requirements met
1	9	8	5	23	100%	Not yet reviewed
tal Navy ar	nd EPA recomm	end for resam	pling		•	
4	3	0	16	23	57%	

4	3	0	16	23	57%
_	_	_	_	•	
Trench Unit					Overall score (0,
Tremen onic					1, or 2)
					<u> </u>
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Draft Interim EPA and DTSC review of Parcel UC-1,2,3 & Parcel D-2 Rad Data Eval

	Trench	Fill	Building Sites	Total	% of total
Tota Survey Units in Parcels UC-1,2,3 & D-2	48	80	0	128	100%
Navy recommended resampling	23	55	0	78	61%
Navy recommended reanalyzing archived samples	2	0	0	2	2%
EPA, CDPH, DTSC recommend resampling			0	0	0%
Total recommended resampling	23	55	0	78	61%
No signs of falsification found in data			0	0	0%
EPA not yet reviewed			0	0	0%
% of total recommended resampling	48%	69%	0%	61%	

The above was for Parcel B alone. Below is for entire Shipyard.

Total Survey Units in Hunters Pt Tetra Tech EC	305	514	*
Parcels D-2 & UC-1,2,3 as % of total	16%	16%	*

^{*} Parcel B has 7 former building sites, which is 21% of the total 34. The above chart shows survey units at building sites.

The number of survey units at building sites for the entire site was not available.

Breakdown for Fill

Total	% of total	D-2	UC-1	UC-2	
80	100%	5	26	20	Tota Survey Units in Parcels UC-1,2,3 & D-2
55	69%	4	14	13	Navy recommended resampling
0	0%	0	0	0	Navy recommended reanalyzing archived samples

Total % of total

	T		I			
			>=2			
Trench	No gamma static	Weight	results			
Unit	and scan	difference	Zero or			
			negative			
66	16	5	30	0	0	0
100%	24%	8%	45%	0%	0%	0%
TU001	1		1			
TU002	1		1			
TU003	1		1			
TU004	1		1			
TU005	1					
TU006	1		1			
TU007	1	1	1			
TU008	1					
TU009	1					
TU010	1					
TU011	1					
			1			
TU012	1		1			
TU013	1		1			
TU014	1					
TU015						
TU016	1					
TU017						
TU018			1			
TU019	1	1	1			
TU020	1		1			
TU021			1			
TU022			1			
TU023			1			
TU024			1			
TU025						
TU026						
TU027						
TU028			1			
TU029						
TU030						
TU033			4			
TU036			1			
TU037						
TU039			1			
TU040		1	1			
TU041						
TU042			1			
TU043						
TU044		1				
TU045			1			
TU046						
TU047						
TU048						
TU049			1			
TU050						
TU050A						
TU051						
TU051A						
TU051A						
TU053			1			
TU054			1			
TU055						
TU056			1			
TU058			1			
TU060		1	1			
TU061			1			
TU062						
TU062						
TU063						
TU064			1			
TU065						
TU125			1			
TU126			_			
TU127						
TU128						
10120			<u> </u>		<u> </u>	<u> </u>
TU59		1				
1033		1				

Parcel	Trench	Suspect name	Name, if suspect	Name, if not suspect
D-2 TU031		(1=yes, 0=no)	•	
D-2 TU031		0		J. Rosenhagen
D-2	TU032	1	R. Zahensky	
D-2	TU034	0		P. Vigil
D-2	TU035	0		C. Schultz
D-2	TU038	0		P. Vigil
D-2	TU134	1	A. Smith	
UC-1	TU133	1	C. Bell	
UC-1	TU139	1	A. Smith	
UC-1	TU146	1	C. Bell	
UC-3	TU170	1	R. Roberson	
UC-3	TU172	TU172 1 C. Bell		
UC-3	TU173	1	A. Smith	
UC-3	TU174	1	C. Bell	
UC-3	TU176	1	C. Bell	
UC-3	TU178	1	C. Bell	
UC-3	TU179	1	C. Bell	
UC-3	TU180	1	A. Smith	
UC-3	TU181	1	R. Roberson	
UC-3	TU182	1	C. Bell	
UC-3	TU183	1	C. Bell	
UC-3	TU185	0		C Hughes
UC-3	TU187	1	C. Bell	
UC-3	TU188	1	C. Bell	
UC-3	TU189	1	C. Bell	